AN 2000:457005 CAPLUS
DN 133:97156
ED Entered STN: 07 Jul 2000
TI Preparation of (difluoromethyl)benzene derivatives as liquid crystal compounds exhibiting negative anisotropy of permittivity
IN Tamura, Norio; Fujita, Atsuko; Takeuchi, Hiroyuki; Takeshita, Fusayuki; Nakagawa, Etsuo
PA Chisso Corporation, Japan
SO PCT Int. Appl., 104 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C07C043-225
ICS C07C047-575; C07C065-26; C07D211-14; C07D213-30; C07D239-26; C07D319-06; C09K019-08; G02F001-13
CC 75-11 (Crystallography and Liquid Crystals)
Section cross-reference(s): 74
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000039063	A1	20000706	WO 1999-JP6973	19991213
	W: DE, JP, US				
	DE 19982965	T0	20010426	DE 1999-19982965	19991213
	US 6576303	B1	20030610	US 2000-622826	20000824
PRAI	JP 1998-370025	A	19981225		
	WO 1999-JP6973	W	19991213		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000039063	ICM	C07C043-225
	ICS	C07C047-575; C07C065-26; C07D211-14; C07D213-30; C07D239-26; C07D319-06; C09K019-08; G02F001-13
	IPCI	C07C0043-225 [ICM,7]; C07C0043-00 [ICM,7,C*]; C07C0047-575 [ICS,7]; C07C0047-52 [ICS,7,C*]; C07C0065-26 [ICS,7]; C07C0065-00 [ICS,7,C*]; C07D0211-14 [ICS,7]; C07D0211-00 [ICS,7,C*]; C07D0213-30 [ICS,7]; C07D0213-00 [ICS,7,C*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C*]; C07D0319-06 [ICS,7]; C07D0319-00 [ICS,7,C*]; C09K0019-08 [ICS,7]; G02F0001-13 [ICS,7]
	IPCR	C09K0019-04 [I,C*]; C09K0019-04 [I,A]; C09K0019-10 [I,C*]; C09K0019-12 [I,A]; C09K0019-18 [I,A]; C09K0019-20 [I,A]; C09K0019-30 [I,C*]; C09K0019-30 [I,A]; C09K0019-34 [I,C*]; C09K0019-34 [I,A]; C09K0019-40 [I,C*]; C09K0019-40 [I,A]
	ECLA	C09K019/04A; C09K019/12; C09K019/18; C09K019/20; C09K019/30A1; C09K019/30A2; C09K019/30A5; C09K019/34A; C09K019/34B1; C09K019/34B2C; C09K019/40F
DE 19982965	IPCI	C07C0043-225 [ICM,7]; C07C0043-00 [ICM,7,C*]; C07C0047-575 [ICS,7]; C07C0047-52 [ICS,7,C*]; C07C0065-26 [ICS,7]; C07C0065-00 [ICS,7,C*]; C07D0211-14 [ICS,7]; C07D0211-00 [ICS,7,C*]; C07D0213-30 [ICS,7]; C07D0213-00 [ICS,7,C*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C*]; C07D0319-06 [ICS,7]; C07D0319-00 [ICS,7,C*]; C09K0019-08 [ICS,7]; G02F0001-13 [ICS,7]
	IPCR	C09K0019-04 [I,C*]; C09K0019-04 [I,A]; C09K0019-10 [I,C*]; C09K0019-12 [I,A]; C09K0019-18 [I,A]; C09K0019-20 [I,A]; C09K0019-30 [I,C*]; C09K0019-30 [I,A]; C09K0019-34 [I,C*]; C09K0019-34 [I,A]; C09K0019-40 [I,C*]; C09K0019-40 [I,A]

US 6576303 IPCI C09K0019-34 [ICM,7]; C09K0019-30 [ICS,7]; C07C0211-14 [ICS,7]; C07C0211-00 [ICS,7,C*]; C07C0043-225 [ICS,7]; C07C0043-00 [ICS,7,C*]; C07D0239-26 [ICS,7]; C07D0239-00 [ICS,7,C*]; C07D0319-06 [ICS,7]; C07D0319-00 [ICS,7,C*]

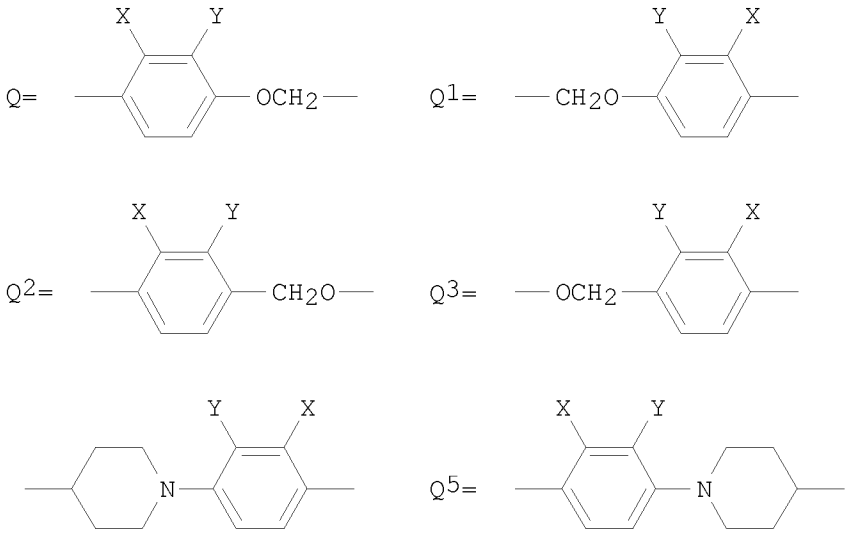
IPCR C09K0019-04 [I,C*]; C09K0019-04 [I,A]; C09K0019-10 [I,C*]; C09K0019-12 [I,A]; C09K0019-18 [I,A]; C09K0019-20 [I,A]; C09K0019-30 [I,C*]; C09K0019-30 [I,A]; C09K0019-34 [I,C*]; C09K0019-34 [I,A]; C09K0019-40 [I,C*]; C09K0019-40 [I,A]

NCL 428/001.100; 252/299.610; 252/299.630; 252/299.660; 544/298.000; 544/334.000; 544/335.000; 546/193.000; 546/194.000; 546/236.000; 549/369.000; 568/588.000; 568/647.000; 570/127.000; 570/129.000; 570/130.000

ECLA C09K019/04A; C09K019/12; C09K019/18; C09K019/20; C09K019/30A1; C09K019/30A2; C09K019/30A5; C09K019/34A; C09K019/34B1; C09K019/34B2C; C09K019/40F

OS MARPAT 133:97156

GI



AB The liquid crystal compds. represented by general formula R1-A-B1-A2-B2-A3-B3-Z-B4-A4-R2 [where in A1, A2, A3 and A4 are each a single bond, 1,4-cyclohexylene, optionally fluorinated 1,4-phenylene, dioxane-2,5-diyl, pyrimidine-2,5-diyl, piperidine-1,4-diyl, optionally fluorinated pyrimidine-2,5-diyl, or 1-sila-1,4-cyclohexylene; B1, B2, B3 and B4 are each a single bond, 1,2-ethylene, 1,2-ethenylene, 1,2-ethynylene, oxymethylene, methyleneoxy, CO2, O2C, or 1,4-butylene; R1 and R2 are each C1-10 alkyl or at least one fluorine-substituted fluoroalkyl; and Z is a group represented by general formula Q, Q1, Q2, Q3, Q4, or Q5; wherein X is H or F; and Y is difluoromethyl, difluoromethoxy, formyl or carboxyl] are prepared These compds. exhibit high neg. anisotropy of permittivity (dielec. anisotropy) ($\Delta\varepsilon$), and are excellent in low-temperature compatibility with other liquid crystal compds., low in viscosity, and chemical and phys. stable and provide liquid crystal compns. for liquid crystal displays. Thus, fluorination of 1-ethoxy-2-fluoro-3-formyl-4-(4-(4-

pentylcyclohexyl)cyclohexyl)methyloxybenzene by (Diethylamino)sulfur trifluoride (DAST) gave 3-difluoromethyl-1-ethoxy-2-fluoro-4-(4-(4-pentylcyclohexyl)cyclohexyl)methyloxybenzene which exhibited $\Delta\varepsilon$ of -8.4.

ST difluoromethylbenzene prepn liq crystal; neg anisotropy permittivity liq crystal; dielec anisotropy difluoromethylbenzene liq crystal

IT Liquid crystal displays
Liquid crystals
(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

IT 22692-80-4 40817-08-1 50649-59-7 50649-60-0 59855-05-9
61203-99-4 61204-01-1 63221-88-5 63295-01-2 67589-41-7
68400-50-0 70567-18-9 74305-48-9 76802-59-0 76802-61-4
79319-27-0 79709-84-5 79912-85-9 79945-42-9 80944-44-1
80955-71-1 81701-13-5 81711-13-9 81936-32-5 82832-27-7
82832-33-5 82832-34-6 82832-57-3 83242-83-5 84655-98-1
84656-75-7 84656-77-9 85312-59-0 86579-52-4 86778-48-5
88038-92-0 88416-69-7 88416-84-6 88416-89-1 88639-41-2
88878-50-6 89129-90-8 92263-41-7 93743-04-5 95495-15-1
95906-34-6 96184-42-8 96624-41-8 96624-52-1 97398-80-6
98321-58-5 100497-33-4 100980-86-7 102714-92-1 102714-93-2
102714-95-4 107215-66-7 107215-74-7 110881-30-6 114291-10-0
116090-24-5 116090-25-6 116090-30-3 116090-36-9 116090-37-0
116903-46-9 116903-47-0 116903-48-1 116903-49-2 117923-23-6
118164-50-4 120893-64-3 121219-85-0 123787-68-8 129738-34-7
129738-42-7 130746-66-6 130746-72-4 131819-23-3 131819-24-4
132123-39-8 132123-45-6 132123-46-7 133914-49-5 133914-50-8
133937-72-1 134412-17-2 134412-18-3 135734-59-7 136922-42-4
137529-41-0 137529-63-6 139195-59-8 139420-31-8 140212-75-5
140212-76-6 140212-77-7 142400-92-8 145131-05-1 145305-20-0
146781-29-5 148462-51-5 148462-52-6 153227-45-3 153227-50-0
153227-53-3 153429-48-2 155041-85-3 173306-39-3 175859-23-1
175859-24-2 175859-25-3 175859-28-6 176176-43-5 178689-87-7
181369-18-6 183145-19-9 183388-45-6 184161-94-2 186320-72-9
187171-90-0 192131-28-5 196870-32-3 197012-69-4 197012-83-2
208664-36-2 208709-74-4 280121-93-9 280121-98-4 280122-10-3
280122-11-4 280122-12-5 280122-13-6 280122-14-7
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(liquid crystal composition containing; preparation of (difluoromethyl)benzene derivs.
liquid crystal compds. exhibiting neg. anisotropy of permittivity)

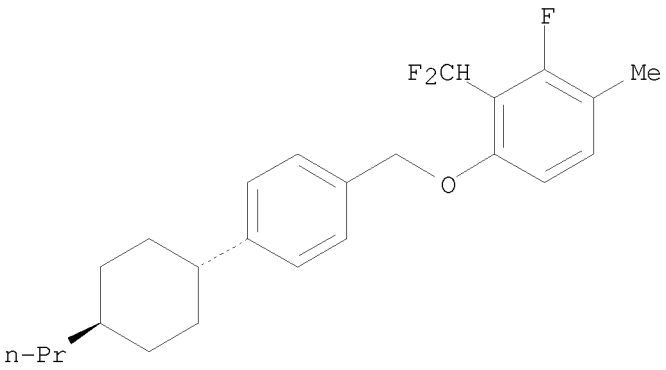
IT 280121-91-7 280121-92-8 280121-94-0 280121-95-1 280121-96-2
280121-97-3 280122-00-1
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(liquid crystal composition; preparation of (difluoromethyl)benzene derivs. liquid
crystal compds. exhibiting neg. anisotropy of permittivity)

IT 280121-63-3P 280121-66-6P 280121-67-7P 280121-71-3P
280121-75-7P 280121-78-0P 280121-83-7P 280121-85-9P
280121-86-0P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)

IT 75-03-6, Ethyl iodide 106-38-7, 4-Bromotoluene 107-30-2, Methoxymethyl chloride 121-43-7, Trimethyl borate 613-84-3, 5-Methylsalicylaldehyde 626-60-8, 3-Chloropyridine 40649-36-3, 4-Propylcyclohexanone 51436-99-8, 4-Bromo-2-fluorotoluene 79636-94-5, 5-Bromo-2-ethoxybenzaldehyde 88639-45-6 98121-48-3 151105-68-9

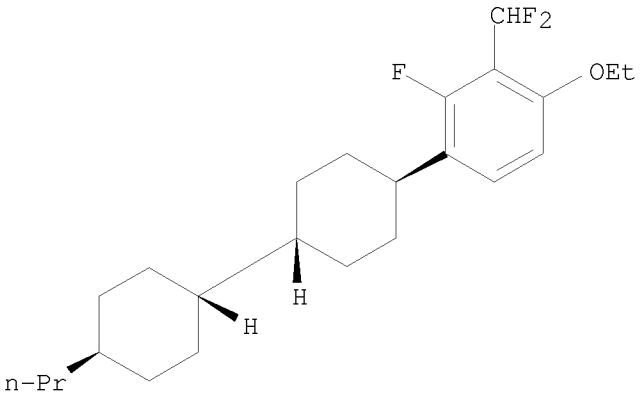
163004-99-7 280121-72-4 280121-87-1
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)
IT 452-78-8P, 3-Fluoro-4-methylphenol 132122-19-1P 247176-23-4P
280121-64-4P 280121-65-5P 280121-69-9P 280121-70-2P 280121-73-5P
280121-74-6P 280121-76-8P 280121-77-9P 280121-79-1P 280121-80-4P
280121-81-5P 280121-82-6P 280121-84-8P 280121-88-2P 280121-89-3P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)
OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (7 CITINGS)
UPOS.G Date last citing reference entered STN: 03 Jun 2009
OS.G CAPLUS 2009:319558; 2009:185116; 2007:434224; 2005:1103723; 2004:1037203
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE CITED REFERENCES
(1) Anon; JP 05502433 A
(2) Anon; EP 395666 A1 CAPLUS
(3) Anon; JP 58154544 A CAPLUS
(4) Anon; EP 87056 A1 CAPLUS
(5) Anon; WO 8903821 A1 CAPLUS
(6) Anon; US 4478740 A 1984 CAPLUS
(7) Anon; US 5358663 A 1994 CAPLUS
(8) Basf Ag; DE 19731200 A1 CAPLUS
(9) Basf Ag; DE 19629523 A1 1998 CAPLUS
(10) Hoffmann-La Roche Inc; JP 06192190 A CAPLUS
(11) Hoffmann-La Roche Inc; EP 579066 A2 CAPLUS
(12) Hoffmann-La Roche Inc; US 5324747 A 1994 CAPLUS
(13) Jacobi, A; Mol Cryst Liq Cryst Sci Technol, Sect A 1997, V304, P15 CAPLUS
(14) Riker Laboratories Inc; DE 3931954 A1 CAPLUS
(15) Riker Laboratories Inc; US 4952574 A 1990 CAPLUS
IT 280121-71-3P 280121-83-7P 280121-86-0P
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of (difluoromethyl)benzene derivs. liquid crystal compds. exhibiting neg. anisotropy of permittivity)
RN 280121-71-3 CAPLUS
CN Benzene, 2-(difluoromethyl)-3-fluoro-4-methyl-1-[[4-(trans-4-propylcyclohexyl)phenyl]methoxy]- (CA INDEX NAME)

Relative stereochemistry.



RN 280121-83-7 CAPLUS
CN Benzene, 2-(difluoromethyl)-1-ethoxy-3-fluoro-4-[(trans,trans)-4'-propyl[1,1'-bicyclohexyl]-4-yl]- (CA INDEX NAME)

Relative stereochemistry.



RN 280121-86-0 CAPLUS
CN Benzene, 2-(difluoromethyl)-4-ethoxy-3-fluoro-1-[[(trans,trans)-4'-pentyl[1,1'-bicyclohexyl]-4-yl]methoxy]- (CA INDEX NAME)

Relative stereochemistry.